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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,970	03/31/2004	Heng-Chun Huang	BHT-3111-447	4878

7590 07/12/2005
BRUCE H. TROXELL
SUITE 1404
5205 LEESBURG PIKE
FALLS CHURCH, VA 22041

EXAMINER

CONSILVIO, MARK J

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 07/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/812,970

Applicant(s)

HUANG ET AL.

Examiner

Mark Consilvio

Art Unit

2872

(Handwritten signature)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1, 7, 10 and 11 is/are rejected.
- 7) ☒ Claim(s) 2-9 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

Claims 1-4, 10 and 11 are objected to because of the following informalities: Various errors occur with the claim language. For example, "a bottom surfaces" should be corrected to be singular. In the interest of a better description, changes are recommended for the following: "said collimation unit" to "one of (or each) the collimation units of said plurality of collimation units;" "the position" to "a position;" "a dual-layer sub-wavelength structures" to "a dual-tier sub-wavelength structure;" "lower layer" to "lower tier of said dual-tier sub-wavelength structure" and "top layer" to "upper tier of said dual-tier sub-wavelength structure;" and so on. These suggestions are not intended to be exhaustive but representative of the errors contained therein.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 7, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morris et al. (US Patent Application No. 2004/0165823) (herein Morris) in view of Te Kolste et al. (US Patent Application No. 2004/0042081) (herein Te Kolste).

With respect to claim 1, Morris discloses a high transmittance module, comprising: a transmission substrate (100), having a top surface and a bottom surfaces, said top surface being composed of a plurality of projecting parts (not numbered) and a plurality of sunken parts (102, 104, 106, 108), and a plurality of collimation units (42, 44, 46, 48), being disposed at the bottom surface of said transmission substrate corresponding to said projecting and sunken parts of said top surface; wherein said collimation unit is capable of collimating a light into the position of said corresponding sunken part (fig. 7 and par. 32). Morris also teaches that an embodiment wherein the top surface has diffraction gratings (110, 112, 114, 116) composed of a plurality of projecting parts and a plurality of sunken parts (fig. 8). Morris does not expressly disclose said sunken part has a first sub-wavelength structure disposed thereon and said projecting part has a second sub-wavelength structure disposed thereon. However, Te Kolste discloses that sub-wavelength structures may be added to a tiered surface, especially a diffraction grating tiered surface, to act as an anti-reflection coating. Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the teachings of Morris to add sub-wavelength structures to either embodiment of Morris. One of ordinary skill in the art would have been motivated to do this to reduce the amount of light lost to surface reflection thereby improving performance and providing a more efficient optical system.

With respect to claim 7, though Morris clearly indicates that the transmission substrate is transparent, Morris does not expressly disclose that the substrate is made from a polymer

Art Unit: 2872

material. However, many transparent polymer materials are well known in the art to be used as transmission substrates. Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the teachings of Morris to use such a material for the substrate for its desirable properties and low cost.

With respect to claim 11, though Morris is silent to the addition of sub-wavelength structures, Te Kolste shows the positioning of said first sub-wavelength structure and said second sub-wavelength is one of the following: independently lined-up by oneself corresponding to the other or interlaced with each other (fig. 2A and par. 26). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the teachings of Morris to this particular arrangement to facilitate uncomplicated manufacturing.

Allowable Subject Matter

Claims 2-6, 8, and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Though the prior art discloses or suggests the combination as set forth in claim 1, the prior art of record fails to teach or suggest the aforementioned combination further comprising a light source is arranged beneath said collimation unit for providing said light. Such an arrangement would not allow the collimating unit to collimate the light into the position of the corresponding sunken part.

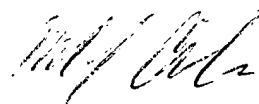
Art Unit: 2872

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Consilvio whose telephone number is (571) 272-2453. The examiner can normally be reached on Monday thru Friday, 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on (571) 272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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